

AMENDMENTS TO THE CLAIMS

1-36. (Cancelled)

37. (New) A method for encoding video data, comprising the steps of:
dividing an image into blocks, each block including a plurality of pixels,
transforming the pixels of a block into transform coefficients, and
quantizing the coefficients in accordance with predefined quantization intervals by mapping each
coefficient value to a quantized coefficient value,
wherein the quantization intervals are set in accordance with a predefined quantization curve,
said quantization curve being a non-linear curve having smaller quantization intervals for lower
coefficient values.

38. (New) The method according to claim 37, wherein the step size of the quantization
intervals of said predefined quantization curve increases for larger coefficient values.

39. (New) The method according to claim 37, wherein said quantization intervals increase in
accordance with a piecewise linear curve, a root curve or a logarithmic curve for increasing
coefficient values.

40. (New) The method according to claim 37, wherein said predefined quantization curve
being defined by parameters, and said quantized coefficient values together with said predefined
parameters represent the encoded video data.

41. (New) The method according to claim 37, wherein said quantizing step comprises the
steps of:
weighting said coefficient values in accordance with said predefined quantization curve, and
quantizing said weighted coefficient values by applying fixed quantization intervals.

42. (New) The method according to claim 41, wherein said fixed quantization intervals being
quantization intervals of a regular interval size.

43. (New) The method according to claim 41, wherein said quantization curve being a piecewise linear curve, a root curve or a logarithmic curve.

44. (New) The method according to claim 37, wherein said method further comprises the steps of:

detecting the presence of film grain within the video data to be encoded, and enabling the application of said quantization curve only if film grain has been detected.

45. (New) The method according to claim 40, wherein said method further comprises the steps of:

detecting the presence of film grain within the video data to be encoded, and enabling the application of said quantization curve only if film grain has been detected.

46. (New) The method according to claim 41, wherein said method further comprises the steps of:

detecting the presence of film grain within the video data to be encoded, and enabling the application of said quantization curve only if film grain has been detected.

47. (New) The method according to claim 37, wherein said method further comprises the steps of:

detecting a degree or the presence of film grain within the video data to be encoded, and adjusting the parameters of said predefined quantization curve in accordance with the detection result.

48. (New) The method according to claim 40, wherein said method further comprises the steps of:

detecting a degree or the presence of film grain within the video data to be encoded, and adjusting the parameters of said predefined quantization curve in accordance with the detection result.

49. (New) The method according to claim 41, wherein said method further comprises the steps of:

detecting a degree or the presence of film grain within the video data to be encoded, and
adjusting the parameters of said predefined quantization curve in accordance with the detection result.

50. (New) The method according to claim 44, wherein said method further comprises the steps of:

detecting a degree of film grain within the video data to be encoded, and
adjusting the parameters of said predefined quantization curve in accordance with the detection result.

51. (New) The method according to claim 37, wherein said method further comprises the step of predicting the block to be encoded based on a previously encoded block wherein said prediction step comprises a decoding step including a de-quantization step which applies said predefined quantization curve in inverse manner to said encoded coefficients.

52. (New) An encoder for encoding video data based on image blocks, each block including a plurality of pixels, comprising:

a transform unit for transforming the pixels of a block into transform coefficients, and
a quantizer for quantizing the transform coefficients in accordance with predefined quantization intervals by mapping each coefficient value to a quantized coefficient value,
the quantization intervals are set in accordance with a predefined quantization curve, said quantization curve being a non-linear curve having smaller quantization intervals for lower coefficient values.

53. (New) The encoder according to claim 52, wherein the quantization intervals of said predefined quantization curve having a step size which increases for larger coefficient values.

54. (New) The encoder according to claim 52, wherein said quantization intervals increase in accordance with a piecewise linear curve, a root curve or a logarithmic curve for increasing coefficient values.

55. (New) The encoder according to claim 52, wherein said predefined quantization curve being defined by parameters, and said quantized coefficient values together with said predefined parameters represent the encoded video data.

56. (New) The encoder according to claim 52, wherein said quantizer comprises:
weighting means for weighting said coefficient values in accordance with said predefined characteristic curve, and
core quantization means for quantizing said weighted coefficient values by applying fixed quantization intervals.

57. (New) The encoder according to claim 56, wherein said fixed quantization intervals being quantization intervals of a regular interval size.

58. (New) The encoder according to claim 56, wherein said characteristic curve being a piecewise linear curve, a root curve or a logarithmic curve.

59. (New) The encoder according to claim 52, further comprising:
a detector for detecting the presence of film grain within the video data to be encoded, and
enabling means for enabling the application of said quantization curve only if film grain has been detected.

60. (New) The encoder according to claim 55, further comprising:
a detector for detecting the presence of film grain within the video data to be encoded, and
enabling means for enabling the application of said quantization curve only if film grain has been detected.

61. (New) The encoder according to claim 56, further comprising:

a detector for detecting the presence of film grain within the video data to be encoded, and enabling means for enabling the application of said quantization curve only if film grain has been detected.

62. (New) The encoder according to claim 52, further comprising:
a detector for detecting a degree or the presence of film grain within the video data to be encoded, and
setting means for adjusting the parameters of said predefined quantization curve in accordance with the detection result.

63. (New) The encoder according to claim 55, further comprising:
a detector for detecting a degree or the presence of film grain within the video data to be encoded, and
setting means for adjusting the parameters of said predefined quantization curve in accordance with the detection result.

64. (New) The encoder according to claim 56, further comprising:
a detector for detecting a degree or the presence of film grain within the video data to be encoded, and
setting means for adjusting the parameters of said predefined quantization curve in accordance with the detection result.

65. (New) The encoder according to claim 59, further comprising:
a detector for detecting a degree of film grain within the video data to be encoded, and
setting means for adjusting the parameters of said predefined quantization curve in accordance with the detection result.

66. (New) The encoder according to claim 52, wherein said encoder being a predictive encoder and further comprises a decoder for decoding the encoded video data, said decoder including a de-quantizer applying said predefined quantization curve in inverse manner.

67. (New) A method for decoding encoded video data on a block basis, said encoded video data including quantized coefficients, comprising the steps of:

de-quantizing a block of quantized coefficients of said encoded video data by mapping each quantized coefficient value to a de-quantized coefficient value in accordance with predefined quantization intervals, and

transforming a block of de-quantized coefficients into a block of pixels, wherein the quantization intervals are set in accordance with a predefined quantization curve, said quantization curve being a non-linear curve having smaller quantization intervals for lower coefficient values.

68. (New) The method according to claim 67, wherein the quantization intervals of said predefined quantization curve having a step size which increases for larger coefficient values.

69. (New) The method according to claim 67, wherein said quantization intervals increase in accordance with a piecewise linear curve, a root curve or a logarithmic curve for increasing coefficient values.

70. (New) The method according to claim 67, wherein said predefined quantization curve being defined by parameters, and said quantized coefficient values together with said predefined parameters represent said encoded video data.

71. (New) The method according to claim 70, wherein said parameters define the quantization curve applied to said quantized coefficient values during encoding.

72. (New) The method according to claim 67, wherein said de-quantizing step comprises the steps of:

de-quantizing said quantized coefficients by applying an inverse quantization having fixed quantization intervals, and

weighting said de-quantized coefficient values in accordance with said predefined quantization curve.

73. (New) The method according to claim 72, wherein said fixed quantization intervals being quantization intervals of a regular interval size.

74. (New) The method according to claim 72, wherein said quantization curve being a piecewise linear curve, a root curve or a logarithmic curve.

75. (New) A decoder for decoding encoded video data on a block basis, said encoded video data include quantized coefficients, comprising:

an inverse quantizer for de-quantizing a block of quantized coefficients of said encoded video data by mapping each quantized coefficient value to a de-quantized coefficient value in accordance with predefined quantization intervals, and

an inverse transformer for transforming a block of de-quantized coefficients into a block of pixels,

wherein the quantization intervals are set in accordance with a predefined quantization curve, said quantization curve being a non-linear curve having smaller quantization intervals for lower coefficient values.

76. (New) The decoder according to claim 75, wherein the quantization intervals of said predefined quantization curve having a step size which increases for larger coefficient values.

77. (New) The decoder according to claim 75, wherein said quantization intervals increase in accordance with a piecewise linear curve, a root curve or a logarithmic curve for increasing coefficient values.

78. (New) The decoder according to claim 75, wherein said predefined quantization curve being defined by parameters, and said quantized coefficient values together with said predefined parameters represent the encoded video data.

79. (New) The decoder according to claim 78, wherein said parameters define the quantization curve applied to said quantized coefficient values during encoding.

80. (New) The decoder according to claim 75, wherein said inverse quantizer comprises:
core de-quantizing means for de-quantizing said quantized coefficients by applying an inverse
quantization having fixed quantization intervals, and
weighting means for weighting said de-quantized coefficient values in accordance with said
predefined quantization curve.

81. (New) The decoder according to claim 80, wherein said fixed quantization intervals
being quantization intervals of a regular interval size.

82. (New) The decoder according to claim 80, wherein said quantization curve being a
piecewise linear curve, a root curve or a logarithmic curve.